

Grafoil: Flexible Graphite packing and gasketing material

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What is GRAFOIL® Flexible Graphite?

GRAFOIL® Flexible Graphite is a distinctive material with essential characteristics of graphite but with complementary properties different from conventional manufactured carbons or graphite such as those used in mechanical seals. When flexibility, compactibility, conformability, and resilience are added to graphite's basic properties, you have the characteristics of "flexible graphite". You also have a superior high-performance packing, v-packing and gasketing material for making seals and gaskets.

How is GRAFOIL® Flexible Graphite manufactured?

UCAR Carbon manufactures **GRAFOIL® Flexible Graphite** as a rolled sheet product by taking a high quality particulate graphite flake and processing it through an intercalation process using strong mineral acids. The flake is then heated to volatilize the acids and expand the flake to many times its original size. The expansion process produces a wormlike, dendritic-like structure that can be readily formed by molding or calendaring into sheets. No binders are introduced in the manufacturing process. The result is a gasket sheet product that exhibits excellent tensile strength and, for industrial applications, typically exceeds 97% elemental carbon by weight which is great for heat sinks.

What are some typical characteristics of this gasketing material?

It is flexible, compressible, resilient, chemically inert, fire safe, heat sinks and is stable under load and temperature. It is also anisotropic due to its crystalline structure and has excellent directional, electrical and thermal conduction properties. **GRAFOIL® Flexible Graphite** has found applications in chemical gasketing, high temperature automotive gasketing, heat shielding, and noise damping components. It is also effective in electronics applications involving RFI and EMI shielding, as well as good heat sinks applications.

Is the source of the raw natural graphite flake you start with an important factor?

The origin of the raw incoming flake is *extremely* important. UCAR Carbon sets rigid standards and is very selective in the qualification of available world flake sources to eliminate undesirable and harmful elemental contaminants in UCAR's finished products.

Does UCAR acid treat its flake or is it purchased from someone else?

To assure the highest possible control and quality in this critical process step,

UCAR Carbon has processed its own flake since we invented flexible graphite over 30 years ago. We also believe processing flake ourselves in our highly automated process, rather than purchasing this service, allows us to more effectively manage costs. We are continually improving our process so that today it is a world-class, state-of-the-art flake processing facility.

What thicknesses and sizes are available?

This gasket material is available starting with our patented ultra-thin .003" thick GTTMY, or standard gaskets material from .005" up to .060" thick, in standard increments of .005". Our standard rolling line widths are 24" and 39.4". Material can also be supplied in custom slit widths or cut sheets. We can also laminate sheets to form virtually any thickness desired.

What gasket densities are available?

Standard density is 70 lbs/ft³ (1.12 g/cc) . However, depending on thickness and order size, densities from below 50 lbs/ft³ up to 90 lbs/ft³ can be manufactured.

Can GRAFOIL® Flexible Graphite be combined with other materials?

Yes. **GRAFOIL®** Laminates are available in several styles with metallic or non-metallic interlayers for additional strength, adhesive facings, and other configurations. For appropriate volumes, we can even help design a laminate for your specific gaskets needs.

What grades are available for sheet, laminates, or other GRAFOIL® Products?

Several grades are available depending on your particular application. Check out the various grade definition tables contained in the following [specs](#) pages. For further assistance, contact our [Seals Sales Office](#) and they will be glad to explain our product offerings and help you select a grade ...or you can request that a technical field sales person contact you.

Where is GRAFOIL®Flexible Graphite sheet actually manufactured and how can someone be assured they are getting genuine GRAFOIL® Flexible Graphite?

All **GRAFOIL®** Flexible Graphite is manufactured in our plant in Cleveland, Ohio. We have multiple state-of-the-art production lines giving us the flexibility to produce material to exacting specifications with the dependability, consistency, and on-time delivery our customers demand. When you need flexible graphite, always specify **GRAFOIL®** Flexible Graphite from UCAR Carbon Company Inc.

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